Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

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August 2, 2023

Enhanced Nitrogen Removal Upgrade
Attn: Patrick Hickey
Oaks Bluff Wastewater Treatment Facility
17 Pennsylvania Ave.
Oak Bluffs, MA 02557

RE: **Oaks Bluff – BWR WPC**
CWSRF No. 7207
Enhanced Nitrogen Removal Upgrade
Groundwater Discharge Permit
674-3
22-WP68-0019-AMD
Plan Approval Determination

Dear Patrick Hickey:

The Southeast Regional Office of the Massachusetts Department of Environmental Protection ("MassDEP") has completed its review of the application for proposed upgrades to the existing Wastewater Treatment Facility (WWTF) in Oak Bluffs in order to accommodate enhanced nitrogen removal from the Oak Bluffs wastewater treatment facility referred to as Wastewater Treatment Facility (WWTF) Enhanced Nitrogen Removal Upgrade for the above-referenced groundwater discharge facility.

As part of the application submitted by the facility's consultant GHD, MassDEP received the following:

1. One (1) set of design plans for regulatory review, with title:

Town of Oak Bluffs
Wastewater Treatment Facility
Enhanced Nitrogen Removal Upgrade
Contract No: 2022-9
CWSRF #7207

SRF Review
October 2022

2. One (1) Engineering Report
3. One (1) project manual
4. A completed WP 68 permit application form
5. Certification Statement

The wastewater treatment facility (WWTF) upgrade includes the future expansion of the treatment capacity at the existing facility, enhanced nitrogen removal, while also replacing equipment and systems that have reached their design life. Initial construction maintains existing capacity while reducing the effluent loading from the plant. Although the project will provide upgrades to allow for increased flow to meet future needs, the plant will be limited to the existing design capacity of 370,000 gallons per day (gpd) until the Massachusetts Environmental Policy Act (MEPA) certification process is completed. When the MEPA certificate is issued, the Town will implement the necessary upgrades to increase capacity to match treatment needs identified in the CWMP.

The proposed upgrade to the Oak Bluffs WWTF will take place on the site of the existing wastewater treatment facility at 17 Pennsylvania Ave, Oak Bluffs. The Town of Oak Bluffs currently has a permitted total maximum daily flow of 370,000 gpd. The permitted discharge capacity is 620,000 gpd at maximum month flow. The discharge capacity includes open sand beds located on the WWTF property, and subsurface leaching trenches at Ocean Park. The current permit for the wastewater treatment facility includes a discharge flow rate for Ocean Park that is 370,000 gpd. The permit does not restrict the use of any portion of the Ocean Park disposal area but does have a maximum flowrate of 340,000 gpd. The Leonardo open sand beds located on the WWTF property have a maximum permitted daily discharge flowrate of 250,000 gpd.

The Oak Bluffs WWTF includes primary clarifiers, screening, grit removal, sequencing batch reactors (SBR), tertiary effluent filtration, and ultraviolet disinfection. The treated effluent discharge can either be sent to the open sand beds located adjacent to the treatment facility or to the subsurface infiltration beds located in Ocean Park. Biosolids are transported offsite.

The treatment process will be modified, replacing the existing SBR secondary treatment process with a Membrane Bioreactor (MBR) process. The upgrades will include:

- Converting the existing SBR tanks to MBR tanks and upgrading the equipment for the secondary treatment process.
- Replacing and upgrading the sludge handling equipment.
- Upgrading electrical and instrumentation systems at the WWTF.
- Updating yard piping, site work, plumbing, and painting as needed at this facility.

- Upgrades to screening, a primary clarifier, a UV disinfection system, odor control, and sludge handling.

The upgrade to the WWTF will be completed with the conversion of the existing four (4) SBR basins to one (1) equalizing basin and three (3) MBR basins. The following sequence of construction will be followed to minimize any reduction in treatment and effluent quality.

- Step 1 – SBR Basin #1 & #2 will be taken offline. SBR Basin #1 will be converted into an equalizing basin.
- Step 2 – MBR Basin #1 will be constructed and put online.
- Step 3 – SBR Basing #3 & #4 will be taken offline.
- Step 4 – MBR Basin #2 & #3 will be constructed and put online.

During the construction process, there may be periods of time where treatment will be compromised if occurring during summer flow periods. Step #3 will be the most critical step. The consultant will make all attempts to make this final conversion to Step 4 during the winter months with reduced flow. The consultant is working with the Town to identify mitigation solutions in the event that there is an overlap of summer months during this step. An example of mitigation steps is adding polymer to the settling cycle. However, there may be a possibility that certain aspects of the permit may not be met at times.

The general sequence of systems for the treatment train is:

- Collection System
- Influent Pump Station(s)
- Preliminary Screens
- Membrane Biological Reactor
    - Pre-Anoxic Tanks
    - Aeration Tanks
    - Post-Anoxic Tanks
    - Membrane Tanks
- Equalization
- Ultraviolet (UV) Disinfection
- Effluent Disposal

The general sequence of systems for the sludge processing train is:

- Waste Activated Sludge (WAS)
- Scum
- Primary waste
    - Sludge Holding Tanks
    - Dewatering System
    - Transport Off-Site

Redundancy is provided for the following equipment:

- Preliminary Treatment – 100% redundancy
- Membranes – One redundant cassette
- UV – One redundant reactor
- All pumps – One redundant pump each
- Blowers – One redundant blower

Odor control will be provided by a biofilter utilizing a wood chip filter system.

The facility will have safety provisions that include fire protection, fall protection, general site security, chemical room containment, and SCADA system remote monitoring. The fire protection provisions will include alarms and sprinkler system. All tanks will be covered, and guard rails will be provided for structures that are over 18-inches above grade. Fall protection will be provided for access into any tank and structure. The general site security will include gates and keypad access at main entrance doors and buildings. The SCADA systems will be connected to the control panels of each piece of equipment and will provide remote monitoring over alarms. The Chemical Room will have eye wash stations.

All chemicals will be located in the chemical room and will be installed with a chemical spill containment system. The spill containment for each chemical is sized to contain 125% of the chemical storage volume, in accordance with TR16 requirements.

Based on the review, MassDEP hereby **approves** the proposed WP68 application for the Enhanced Nitrogen Removal Upgrade project, subject to the following provisions:

1. Construction shall be in strict conformance with the submitted application materials, engineering plans cited above, proposed flow volume and provisions of this approval. No changes shall be made without approval of the Department.

2. A clear water test of the proposed equipment must be performed prior to the system being put on-line. The clear water test shall be scheduled at least twenty-one (21) days in advance so that Department personnel can be present. This will be the only clearwater test required.

3. An updated operation and maintenance manual prepared in accordance with 314 CMR 12.04(1) shall be submitted to this office for review and file record update twenty-one (21) days prior to the clear water test.

4. A written certification that the system, as constructed in accordance with the submitted designs cited above, shall be submitted by a Professional Engineer registered in the Commonwealth of Massachusetts twenty-one (21) days prior to the clear water test.

5. Operation and maintenance of the facility must be in accordance with 314 CMR 12.00: "Operation and Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Discharges" and 257 CMR 2.00: "Rules and Regulations for Certification of Operators of Wastewater Treatment Facilities".

6. The owner/operator shall furnish the Department, within a reasonable time, any information, which the Department may request to determine whether cause exists for modifying, revoking, reissuing, or terminating this approval or to determine whether the owner/operator is complying with the terms and conditions of this approval.

7. As-built plans shall be submitted to this office of the Department within ninety (90) days of the Department's authorization to operate the facility.

If you have any questions or comments regarding this matter, please feel free to contact Ian Jarvis, at Ian.Jarvis@mass.gov.

Sincerely,

Gerard M.R. Martin
Deputy Regional Director
Bureau of Water Resources

ecc: Town of Oak Bluffs Board of Health
Attn: Garrett Albiston, Health Agent (healthagent@oakbluffsma.gov)

GHD - Consultant:
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